

A Holistic Model for Measuring Sustainable Performance Generated by Innovative Projects: The ESCO Energy Transition Case



Jean-Pierre Segers, Dirk V. H. K. Franco, Didier Van Caillie,
Elina Gaile-Sarkane, and Janaina Macke

Abstract In recent years, our society has witnessed a number of paradigm shifts and transitions with potentially severe consequences for the economy and the world of work. Wicked problems and black swan events such as the COVID-19 pandemic, the climate, energy and Ukrainian crisis, the supply chain disruptions triggered a growing attention for grand societal challenges. The latter requires novel holistic and systemic approaches, new models of innovation and adapted business models. In the quadruple—public and private—helix of government, higher education, business, and society, there is a growing attention for a multilevel perspective on sustainability transitions, anchored in the United Nations’ Sustainable Development Goals. Universities—through their core activities of education, research, regional stewardship, and community engagement—are well positioned to contribute to sustainability issues, as they seek solutions for grand societal challenges, such as (re)imagining the energy transition. Based on the above, a holistic approach for measuring sustainable performance generated by innovative projects in a (higher) education setting is outlined. In particular, this chapter presents an interpretive case study for the model of Energy Service Companies—the “ESCO energy transition case”.

J.-P. Segers (✉) · E. Gaile-Sarkane
IEVF, Riga Technical University, 6A Kipsalas Street, Riga LV-1658, Latvia
e-mail: jean-pierre.segers@uhasselt.be

J.-P. Segers
Faculty of Business Economics, Hasselt University, Agoralaan, 3590 Diepenbeek, Belgium

D. V. H. K. Franco
Centre for Environmental Sciences, Hasselt University, Agoralaan, 3590 Diepenbeek, Belgium

J.-P. Segers · D. V. H. K. Franco
PXL University of Applied Sciences and Arts, Elfde Liniestraat 24, 3500 Hasselt, Belgium

J.-P. Segers · D. Van Caillie
HEC Management School, CEPE, Université de Liège, Rue Louvrex 14, 4000 Liège, Belgium

J. Macke
University of Caxias do Sul (UCS), Caxias do Sul, Brazil

Keywords Energy transition · Sustainability · Innovation · ESCO

1 Introduction

The chapter is structured as follows: In the conceptual framework (Sect. 2), the multilevel perspective (Geels & Schot, 2007; Loorbach et al., 2020b) is introduced as a holistic and systemic approach to innovation. Additionally, the evolution toward new and sustainable energy business models is outlined. Section 3 is dedicated to the ESCO energy transition case. Sections 4 and 5 provide a discussion of the findings, conclusions, and suggestions for future research.

Interaction, interdependence, and collaboration are vital elements to collectively cocreate and codevelop solutions for global challenges and wicked problems (Rittel & Webber, 1973), such as the massive use of fossil fuels, greenhouse gases (GHG), and especially, CO₂ in the Earth's atmosphere (Vince, 2019; WMO, 2017). We are witnessing a paradigm shift to meet societal needs beyond conventional economic needs (Hepex, 2020). The necessary transition toward a zero-carbon economy (IPCC, 2021) reshapes our way of living and managing businesses and projects. Demographic growth and natural resource exploitation at increasing rates are environmental problems—a combination of heatwaves, droughts, wildfires, hurricanes, arctic vortex, and snowmageddon—that worsen social issues such as health problems, extreme poverty, and social inequality (Pérez & Frank, 2019; Trouet, 2020). Societal resilience and adaptation are needed to remain competitive and to avoid significant consequences for the climate (Vince, 2019). With the introduction of the Sustainable Development Goals (UN, 2020), environmental objectives and social and ethical aspects intertwine with the definition of sustainable development in the Brundtland Report (Brundtland, 1987; UN, 2020). Organizations and companies increasingly integrate corporate, societal, and environmental resilience into their strategy. Innovation is the engine that powers the global energy transition, as it is both systemic and interwoven. Engaging organizations and companies to generate and adopt energy-efficient innovation is crucial for balancing energy needs for sustainable development (Šūmakaris et al., 2021). It provides momentum for new and formerly unexplored solutions for societal, economic, technological, and environmental challenges. This has led to sharing common values and benefits for various stakeholders and ensuring a more holistic perspective, leading to a new paradigm of innovation: holistic innovation. The latter is total and collaborative innovation driven by a strategic vision in an era of strategic innovation, which aims for a sustainable and competitive advantage (Chen et al., 2018). According to Manceau and Morand (2014), a holistic view of innovation combines research and development and creativity and includes recent design thinking, open innovation, digitalization, sustainable development, and resource-limited innovation. The holistic approach is driven by (1) the multilevel perspective and (2) new business models, as outlined in the following section.

2 Conceptual Framework

The multilevel perspective—MLP—is a prominent transition framework (Avelino, 2017; Geels & Schot, 2007; Loorbach et al., 2020b) to outline the interplay between the various players necessary for a paradigm shift to take place. The MLP posits that transitions come about through interaction processes within and among three analytical levels: niches, sociotechnical regimes, and a sociotechnical landscape:

1. The *macrolevel* forms the “external structure or context for interactions of actors”; oil prices, economic growth, wars, immigration, broad political coalitions, cultural norms, environmental problems, and paradigms are possible factors determining this.
2. The *meso (regime) level* can be seen as the “rule-set or grammar” of processes, technologies, skills, corporate cultures, and artifacts embedded in institutions and infrastructures. The regime tries to maintain itself and ignore the pressure from above, the macrolevel (Stewart, 2012).
3. There is much pressure on this regime from below due to the *microlevel*. This is where radical innovation will happen. This level acts as incubation rooms and allows for research and learning through experience. This area provides the space and time essential for networks to be established.

The framework is shown in Fig. 1.

Collaboration and coherence between the different niche levels are essential. Paradigm shifts of the regime can be seen as the result of a cascade of changes over time. According to Loorbach et al. (2020a), as transition dynamics increase and internal tensions push incumbent actors to reflect upon longer-term futures, transformative innovations will emerge and become more attractive and viable. The vision of a transforming world or business context usually arises with a group of people who are intensely aware of it; from this group, it is necessary to evolve from a transition team via change projects to a change network (Van Yperen et al., 2017). In such paradigm shifts, attention must also be paid to internal and external resistance. At the heart of transition theory lies a paradox: an innovation to have transformative impact needs some degree of diffusion, mainstreaming or institutionalization, but—by definition—this decreases its original, innovative power. Logically, this gradual but rapid paradigm shift that encourages the organization, private or public, to respond to societal needs beyond traditional conventional economic needs (Hepex, 2020) has also had an impact on the dominant vision of organizational excellence, as reflected in the main holistic performance models, notably the one of the European Foundation for Quality Management (EFQM). The very first version of the Business Excellence EFQM Model, already revolutionary at the time of its publication, encouraged us to base this excellence:

- On the capacity of the organization to focus on the continuous meeting of the needs and expectations of its “customer-users”.
- Through a permanent search for optimization of its global internal processes.

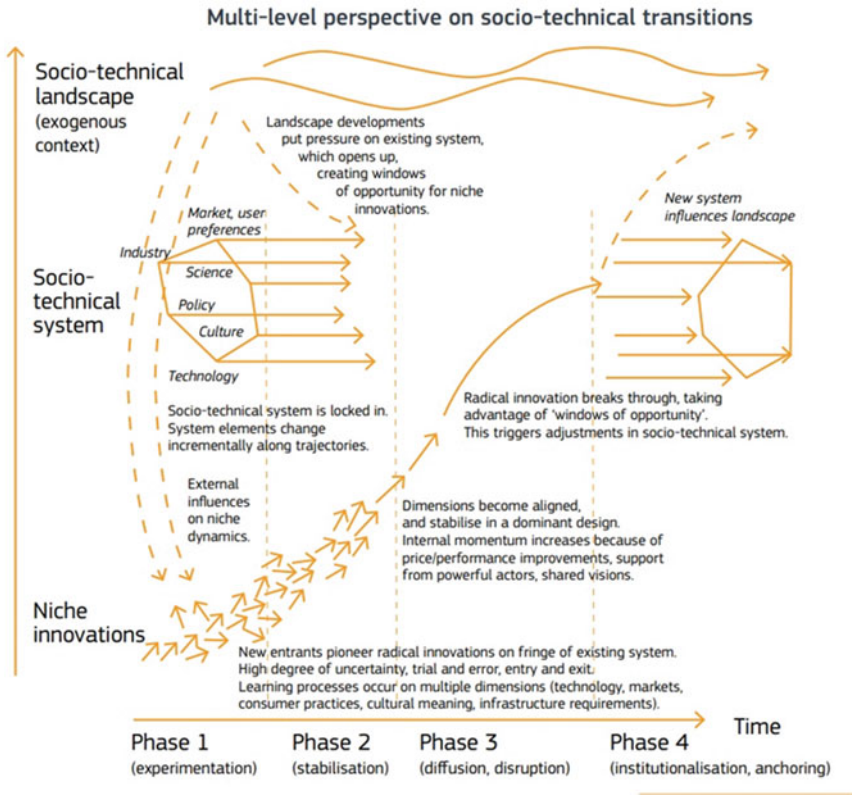


Fig. 1 Multilevel perspective (Geels & Schot, 2007)

- Based on its key resources, committed strategic partners, strong leadership, and a strategy inspired by creativity and innovation.

Its most recent version (EFQM, 2020) places at the heart of this excellence the sustainable performance of the organization, in a holistic vision of an organization evolving in constant interaction with an increasingly important Volatile, Uncertain, Complex, and Ambiguous (VUCA) environment, and as a result, in constant search of organizational innovation capable of making it more reactive and flexible to the real needs of its beneficiaries and society at large, both in terms of its processes and the services it provides. Consequently, achieving organizational excellence implies simultaneously meeting the expectations of its main stakeholders (including society as a whole) by combining a search for continuous optimization of internal processes with effective change management driven by innovation, creativity, and knowledge management. Responding in an agile and efficient way to emerging internal and external threats, transforming them in a progressive but continuous perspective into opportunities by developing a culture based on cocreation with its ecosystem members becomes the fundamental managerial paradigm. By integrating the eight

fundamental concepts of excellence supporting the framework of the EFQM model (2020) with the strategic paradoxes highlighted by De Wit and Meyer (2010), we can consider a sustainable organization (and, by extension, the projects it carries out):

- Has a primary vision of creating a sustainable future for itself and society as a whole.
- Develops an activity and a network strategy based on three clear strategic choices: to add value for its customers or beneficiaries, to contribute to the development of its internal capabilities and to harness creativity and innovation to develop its intangible capital.
- Follows three organizational priorities: to lead the organization (or its projects) with vision, inspiration, and integrity, to manage with agility, and to succeed through the talent of the people involved.
- And finally has as a mission to maintain sustainable and resilient results over time (see Table 1).

Therefore, in this VUCA context, organizational performance is, both at the overall level of the organization and the level of each of its projects,

- Necessarily sustainable.
- Holistic and transversal.
- Constantly seeking alignment, through innovation and creativity, with the external expectations and requirements of its environment and stakeholders and its employees' internal aspirations.

Conceptually, this vision of sustainable organizational performance emerges from a holistic and combined use of four theories now dominant in management science, translated into four paradigms:

Table 1 Strategic look at the EFQM 2020 core principles in a VUCA context

Strategic level	Principles of a strategy to support sustainable organizational excellence
Vision	P1. To create a sustainable future for the stakeholders involved in the organizational project (beneficiaries, intermediaries, employees, shareholders, civil society)
Strategy	P2. Consistently delivering real-added value to clients, intermediaries, and beneficiaries P3. Continuous development of organizational capabilities P4. Continuous exploitation of creativity and innovation in a cocreative perspective with key stakeholders to continuously adjust to changes in a VUCA environment
Operational activities	P5. Leading with vision, inspiration, and integrity, which translates into a flexible strategy and transparent and rigorous governance P6. Manage with agility and responsiveness P7. Succeeding through the talent of people
Mission	P8. To continuously maintain sustainable and resilient results

- The elemental resource-based view (Barney, 1991; Barney et al., 2011; Priem & Butler, 2001; Wernerfelt, 1984) means that any organization or project is considered supported by a portfolio of scarce resources (tangible, intangible, human, and financial) coordinated and balanced via the leadership function.
- The global value chain theory (Gereffi et al., 2005), which means that:
 - Each organization or project develops its internal value chain (combining core design, production, and delivery activities with business and management support activities in the logic of Porter's (1980) value chain model).
 - Each organization is integrated into a global value chain bringing together, most often via complex relational mechanisms, all the actors involved in the design, production and/or provision of a product and/or service in an increasingly fragmented and globalized economic and societal VUCA context.
- The theory of strategic alignment (Henderson & Venkatraman, 1990) means that the organizational transformation induced by this evolution toward organizational excellence necessarily emerges from a continuous alignment between an organization or its project, the information and communication technologies available to it, and the opportunities and requirements of its environment.
- Stakeholder theory (Donaldson & Preston, 1995; Freeman, 1984), which means that ongoing attention to the interests and well-being of stakeholders that can enhance or constrain the achievement of organizational or project goals is the primary driver of organizational performance when managing for and with stakeholders.

New business models and new value propositions (Acs et al., 2017; Autio & Thomas, 2014; Pique et al., 2018; Stam & van de Ven, 2019; Yaghmaie & Vanhaverbeke, 2019) are shaped, disrupting industries—e.g., the energy industry—that are undergoing significant transitions. A business model (Chesbrough & Rosenbloom, 2002) is the sum of complementary elements that define how a company creates, delivers, and captures value (Wirtz et al., 2016). Developing new business models is challenging for organizations and companies. It requires rethinking the strategy and exploring how to incorporate social and environmental dimensions into business architecture (Gassmann et al., 2014; Teece, 2010), design (Boons & Lüdeke-Freund, 2013; Cavicchi & Vagnoni, 2020; Evans et al., 2017; Lüdeke-Freund et al., 2019), innovation and strategy (Magretta, 2002), interconnected and interdependent activity systems (Zott et al., 2011), value generation (Osterwalder & Pigneur, 2010; Osterwalder et al., 2005), open innovation (Podmetina et al., 2017; Vanhaverbeke & Chesbrough, 2014), and managerial and entrepreneurial analysis units (Schaltegger et al., 2016). According to Amit and Zott (2020), business models are opportunities for innovation and can be considered a relevant alternative for creating value for the organization capable of bringing benefits to its customers, suppliers, and other partners (Freudenreich et al., 2020; Matzembacher et al., 2020). Amit and Zott (2020) stress the fits between the business model, the classic strategy (strategic fit), the organization (internal fit), and the ecosystem (external fit). Business models emphasize a holistic approach, looking at the broader societal perspective. In an

ecosystemic mindset (Health Proc Europe, 2021), silos are broken down to move toward a holistic mindset and circular thinking, thus replacing isolation by collaboration. The main idea is to simultaneously maintain or even increase economic prosperity by including the holistic concept of sustainability and in line with the multilevel perspective from above. In other words, a move from a business model focusing purely on profit, with low sustainable value, to a new business model with a high sustainable value (Matzembacher et al., 2020). Sustainable business models are viable avenues for companies to pursue corporate sustainability and shared value creation (Porter & Kramer, 2011) by improving the effectiveness and efficiency of their activities in the spheres of the natural environment, society, and the economy and still profiting from these activities (Lüdeke-Freund & Dembek, 2017; Schaltegger et al., 2016). “Shared value results from policies and practices that contribute to competitive advantage while strengthening the communities in which a company operates” (Porter & Kramer, 2011). According to Mourik et al. (2021), the business model related to energy efficiency is a product-based and technology-centered model and directed toward the commercialization of energy efficiency technologies (Hamwi, 2019), e.g., smart grid services, lighting as a service, heating as a service, and smart energy management as a service. The main focus of the current contribution is on the Energy Service Company model (ESCO) and Energy Performance Contracts (EPCs). Energy Service Companies provide energy services that reduce energy consumption using more efficient energy systems. Energy Service Companies employ a unique financial model and assume most financial and technical risks. They provide holistic energy services and create environmental and social benefits (Hamwi, 2019; Hamwi & Lizarralde, 2019).

3 The ESCO Energy Transition Case

To be successful in the transition into the Post-Fossil-Carbon Society and to reduce climate change, there is a need to reduce energy consumption, in addition to energy flexibility. In its 2030 outlook, Europe imposes 40% CO₂ savings (compared to 1990), a minimum 32.5% energy savings (compared to 2007) and at least 32% of the energy must be renewable. Different member states have set different targets; for Belgium, this is 35% CO₂ savings by 2030 (EU, 2020). Energy use in buildings (residential, educational, business, industrial, government) represents 6.5% of direct and 12% of indirect global CO₂ emissions (Ritchie & Roser, 2020). The energy aspects of buildings are not the core business of companies. The Energy Performance of Buildings Directive in Europe requires all new buildings to be nearly zero-energy by the end of 2020. Additional efforts must be made, especially for existing buildings, as only approximately 1% of the building stock is renovated yearly (EU, 2019; Magrini et al., 2020). Energy optimization in buildings through Energy Service Companies (ESCO)—as defined by directive 2006/32/EC of the European Parliament (2006)—is an interesting and increasingly used methodology. It is “a natural or legal person who provides energy services and/or other measures to improve the energy efficiency in a

user’s facilities or buildings for a longer period, usually 5–20 years, and accepts some degree of financial risk by doing so” (Bleyl, 2014; Bleyl et al., 2019). The ESCO and Energy Performance Contract are output-driven. The Energy Performance Contract is often combined with a maintenance contract; thus, the bonus–malus ratio can be negotiated (Belesco, 2020—Fig. 2). Interactions with all building stakeholders (Franco et al., 2017, 2018) are important to obtain a good bonus/malus ratio for the Maintenance Energy Performance Contract—(M)EPC. The stakeholders are building owners, building operators, facility managers, school boards, and users (professors, students).

On the other hand, the total cost of ownership shows that only 20% of the costs over the entire life are related to the construction costs and 80% to the maintenance afterward. This 80% can be largely attributed to energy (Kale et al., 2016). The interaction of several stakeholders during the process enhances the integrated business model (Bleyl, 2014). Figure 3 explains the integration across the supply chain.

Non-energy benefits (Freed & Felder, 2017) have recently increased in importance when using an EPC, partly due to initiatives such as the WELL Building Standard (Well Standard, 2020) and the BREEAM standard (Breeam, 2020; World Green Building Council, 2020). The Well Building Standard provides a model for developing and integrating functions that promote human health and comfort in a built environment. The World Green Building Council states that improved indoor air quality leads to an 8–11% increase in worker productivity. Moreover, a healthier

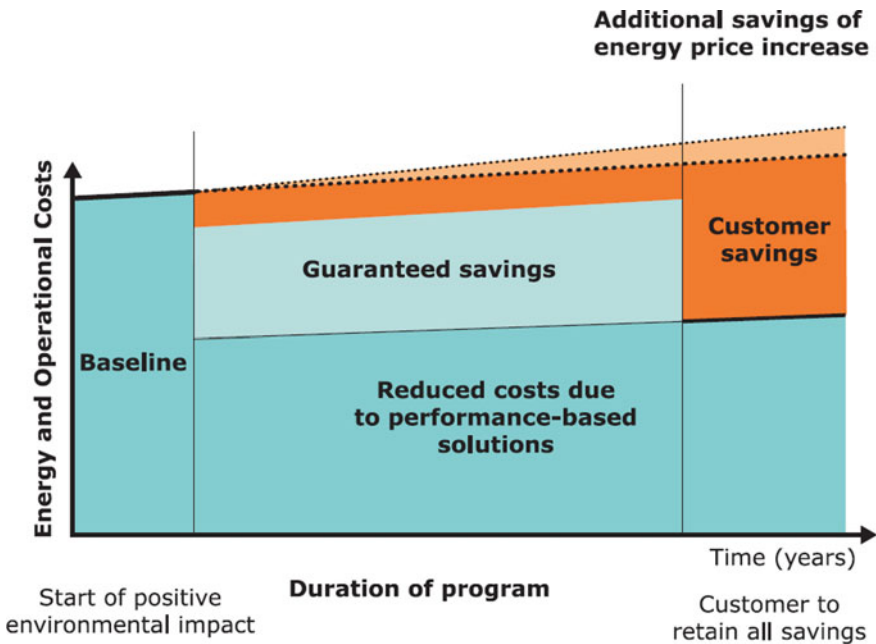


Fig. 2 Bonus–malus system for energy performance contracts (Belesco, 2020)

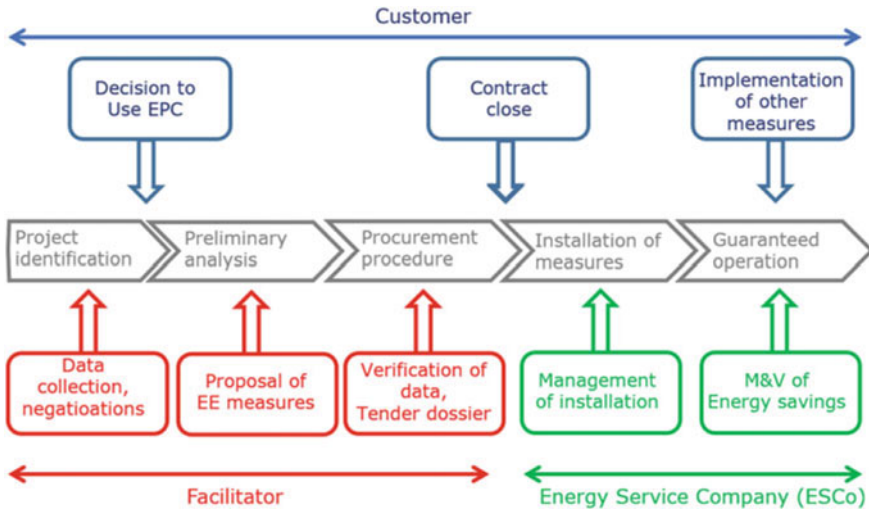


Fig. 3 Role of different stakeholders in energy performance contracts (adapted from Bleyl, 2014)

building has been shown to significantly decrease absenteeism and illness. A “profit” of 1% of the wage costs is often included in the business model (World Green Building Council, 2020). The combination of the MEPC with a more holistic vision linked to the Sustainable Development Goals of the United Nations (UN, 2015, 2020) is shown in Fig. 4.

Educational buildings have enormous potential for improvements in energy efficiency. They represent a large volume managed by a single owner. Moreover, they offer a forum to involve various stakeholders (facility managers, visitors, students, teaching, and research staff) with diverse backgrounds to create, support, and marshal evidence for energy conservation. Energy efficiency has a key role to play in the move toward using the educational campus as a living lab (Franco et al., 2017, 2018; Mazutti et al., 2020)—combining student learning with carbon reduction aspirations (Franco et al., 2022).

In what follows, an interpretive case study according to Walsham’s (2006) classification is presented for an energy transition case. In line with Yin (2009) and the complexity of the research topic, a qualitative approach supplemented by expert interviews is suggested. Interpretive methods such as multiple case studies are the preferred method to study holistically complex phenomena within a real-life context such as energy transition and novel insights in energy business models. The proposed case study focuses on the energy efficiency of educational buildings in Belgium. Pooling (clustering) of campus buildings leads to optimization of payback periods and standardized contracts. We discuss the pooling of two building clusters:

- Cluster 1: Sint-Niklaas Association of schools (secondary education—private and public): several owners—one energy coach. The association of schools in Sint-Niklaas has 54 different locations in the city, united in four different school

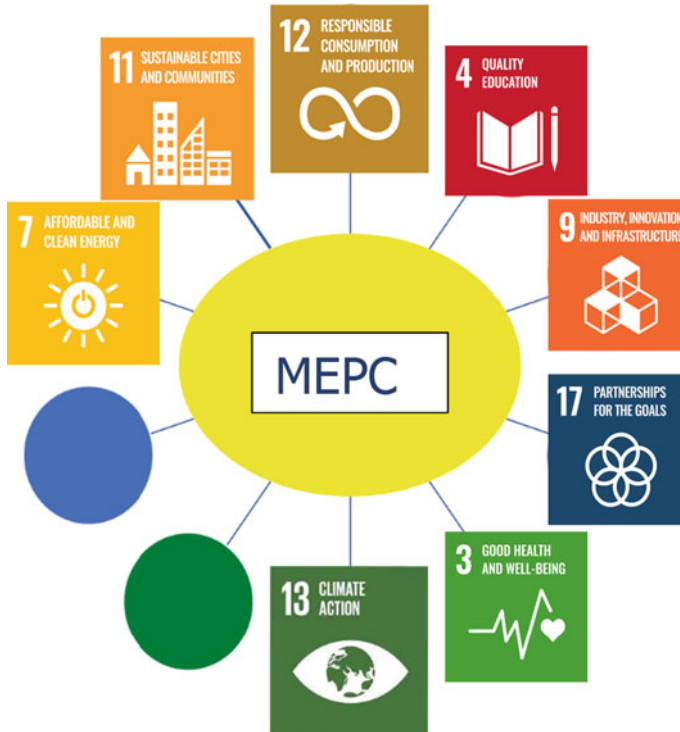


Fig. 4 Holistic view of the maintenance energy performance contract approach

communities: GO! Education of the Flemish Community, Municipal Education Sint-Niklaas, the Sint-Niklaas primary, and the Sint-Niklaas secondary school community, both Catholic Education Flanders. Eleven different authorities manage these 54 school locations (23,000 students and 2700 employees). This is a unique project for Flanders, as there is only one energy coach for all buildings (Franco et al., 2017, 2018).

- Cluster 2: PXL University of Applied Sciences and Arts (higher education—public): several buildings—one single owner. PXL University of Applied Sciences and Arts has nine faculties and is organized in a quadruple helix model (Carayannis et al., 2012), i.e., the interaction between government, knowledge institutions, (regional) business and industry, and the broader society. PXL is a public body and the sole owner of its buildings. It has 10,500 students and employs approximately 1200 employees.

Value propositions for stakeholders and the energy system are investigated, particularly with respect to the business model of Energy Service Companies—the “ESCO energy transition case”. The ESCO case can be classified as a holistic innovation project with an overall impact on sustainable performance and competitive advantage.

4 Main Findings and Discussion

Clustering can offer many benefits, both technically and financially, although the complexity of the cluster must be considered. Shared and multiple value creation (Porter & Kramer, 2011) is of vital importance in the ESCO case. A tailor-made sustainable energy business model (Franco et al., 2020) emerges: the public–private partnership *model* employing a so-called “special purpose vehicle” governance structure. The selected business model relates well to transitions in government and higher education, where the public part of the sustainable energy business model is mostly about societal impact and the private part relates to return on investment for the value proposition. The potential for mutual gains has been verified by improving energy efficiency (public part) and investor financial returns (private part). This confirms the emergence of a holistic model for measuring sustainable performance generated by innovative projects.

Cluster 1—School Association Sint-Niklaas

Due to the complex structure of the 54 schools in Sint-Niklaas and the specific cultures within each school board, it is not possible to apply a copy–paste principle and roll out an identical process in each school. The Energy Performance Contract drawn up by the schools is a pilot project in 2018, which brings about additional uncertainties. However, it will act as a catalyst for other schools in the association of schools in Sint-Niklaas. After many workshops with all stakeholders, the energy coach performed the first audit for four different schools in the association. Two scenarios were developed: Scenario 1 limits the yearly investment budget for the ESCO to € 12,500 per school and per year that the contract is supposed to last. This budget corresponds to approximately 10% of the average annual energy consumption. Considering the average lifetime of 15 years, an investment cost of € 187,500 per school is allowed. Scenario 2 considers an additional investment budget for the schools of € 200,000 per school throughout the project, which increases the total investment cost allowed per school to € 387,500. The financial and CO₂ savings are reported in Table 2. If this money was transferred to the ESCO, the discounted payback time for the ESCO would be below 15 years, so a contract of 15 years becomes feasible (Berk & DeMarzo, 2015). By clustering the investment over the four schools, financial savings in three schools can subsidize the energy savings in one school. Unfortunately, the internal rate of return (IRR) is too low to get the ESCO on board. Even if the total financial savings are transferred to the ESCO, the internal rate of return equals 9.3%, whereas a typical ESCO often requires a minimum return on investment of at least 15%. As the NPV is positive, it is possible to transfer part of the savings to the ESCO.

Cluster 2—PXL University of Applied Sciences and Arts

At PXL University of Applied Sciences and Arts, the Energy Service Companies' (ESCOs) energy transition and the Maintenance Energy Performance Contract (MEPC) led to the setup of a transition team, as shown in Fig. 5. The transition group

Table 2 Scenario 1 (**Scenario 2**)—results cluster (4 schools)

	Electricity (kWh)	Gas (kWh)	Fuel (kWh)
Total annual consumption	1,182,194	3,822,663	2,863,236
Annual savings (%)	14 (32)	9 (15)	9 (9)
Total investment (€)		552,274 (1,227,082)	
Annual savings (€/year)		55,551 (96,693)	
Payback time (PBT) (year)		9 (11)	
(DPBT) (year)		11 (14)	
IRR (%)		9.3 (5.7)	
(NPV) (€)		248,948.71 (167,524.64)	
Reduction CO ₂ (ton/year)		167.9 (277.9)	

The figures in bold = (Scenario 2)

is the pivotal point in the bottom-up and top-down realization of the new policy plan (2021–2026) in which (1) sustainability is included in the mission and vision and (2) further elaborated in the operational policies of education, research, personnel, and facility management. The transition group expanded to a “coalition of the willing” and later to a “coalition for change” in line with the multilevel perspective approach.

The Maintenance Energy Performance Contract (MEPC) introduction might only be valid for four schools in the Sint-Niklaas secondary school cluster. In contrast, it is a catalyst for all the building complexes in the PXL cluster. This is highlighted in the elements of strategic vision and long-term orientation. MEPC is used as the kick-off for a sustainability project within the United Nations Training affiliate (CIFAL-UNITAR Flanders), i.e., the Sustainable Development Goals Pioneer label. The PXL

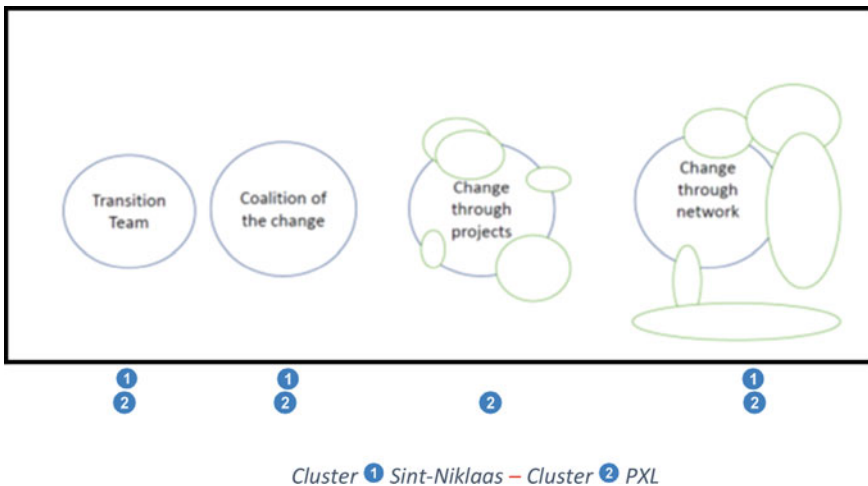


Fig. 5 Change through transition teams (Van Yperen et al., 2017—adapted)

cluster collaborates with local small businesses and industry partners such as the VOKA Chamber of Commerce in a cocreation process to incorporate energy reduction, waste, water, and circularity in the MEPC concept. Additionally, a pilot project on the PXL-Green and Tech (technology) campus was kicked off as a living lab for all building users. PXL will investigate an extended sustainability performance contract process, where not only will energy saving be an objective but equally important:

- Realization of other sustainability aspects, such as water savings, circular renovation, waste reduction.
- Intensive involvement of students and professors throughout the entire trajectory over several academic years.
- Development of key performance indicators, measurements, and analyses.
- Stakeholder management and searching for synergies at the campus level (e.g., one central heating network for the entire campus).

Based on the data collected in the investment matrix, we consider two investment scenarios (Table 3). The base case “heating/sanitary hot water (SWH) and lighting” has an investment volume of € 2,610,903, which generates annual savings of € 242,569 with a simple payback time of 11.5 years, and the enhanced case “heating/SHW and lighting” has an investment volume of € 4,145,854, which generates annual savings from € 296,581 with a simple payback time of 15.2 years.

Table 3 Base and enhanced case PXL buildings

Topic	Base case	Enhanced case
Consumption total (kWh/y)	9,891,356	9,891,356
Consumption total (kWh/m ² /y)	136.9	136.9
Consumption total (€/y)	778,044	778,044
Consumption total (€/m ² /y)	10.8	10.8
Total investment (€)	2,610,903	4,145,854
Total investment (€/m ²)	36.1	57.4
Savings (kWh/y)	3,329,616	4,156,002
Savings (kWh/m ² /y)	46.1	57.5
Savings (kWh/y)	3,065,465	3,869,488
Savings incl rel (kWh/m ² /y)	42.4	53.6
Savings (€/y)	242,569	296,581
Savings (€/m ² /y)	3.4	4.1
Savings (€/y)	226,720	271,940
Savings (€/m ² /y)	3.1	3.8
Savings total (%)	33.66	42.02
Savings total incl effect rel (%)	30.99	39.12
Payback time (y)	11.5	15.2
Reduction CO ₂ (ton/y)	606	762

A focus group of experts was created for an in-depth understanding of possibilities to measure holistic innovation models. The experts agreed that the main parameters included in the analyzed elements are R&D, creativity, cultural design thinking, open innovation, digitalization, sustainable development, strategic vision, sustainable and competitive advantage, long-term orientation, and uncertainty avoidance. For the measurement of the results, a visualization method was applied. Experts evaluated each parameter from the ESCO case by applying symbols, as shown in Table 4.

One aspect that differs in the two cases is uncertainty avoidance (Hofstede, 1997). Belgium has a history marked by governments and nonconsensual rules. This fact generates a search for security in organizations, more deductive teachings and training, and more detailed rules (change policies are considered stressful). Regarding “uncertainty avoidance”, despite the national Belgium culture trend (Hofstede, 2021), the PXL case shows an effort to overcome this national feature. This fact indicates that the members of the PXL case feel more comfortable with innovative or unknown situations and do not use beliefs and agreements that try to avoid them (which can be seen in the “open innovation” and R&D dimensions). Regarding creativity and design thinking, both cases are similar. Considering “long-term orientation” (Hofstede, 1997), the cases were also evaluated similarly, although the “strategic vision” is more present in the PXL case. The long-term view indicates a pragmatic orientation when people believe that the truth depends greatly on the situation, the context, and the time (Hofstede, 2021).

Table 4 Analysis of holistic elements of innovation projects within the ESCO case

Holistic approach elements	ESCO cluster 1 School Association Sint-Niklaas (secondary education—private/public sector)	ESCO cluster 2 PXL University of Applied Sciences and Arts (higher education—public sector)
R&D	○	●
Creativity	●	●
Culture	●	●
Design thinking	◐	◐
Open innovation	◐	●
Digitalization	●	●
Sustainable development	●	●
Strategic vision	◐	●
Sustainable and competitive advantage	◐	●
Long-term orientation	●	●
Uncertainty avoidance	●	◐

Symbols: ●—yes; ○—no; ●, ◐, ◑—partly

Considering the ESCO case from a sustainable performance perspective, Tables 5 and 6 show that this holistic innovation project applies the eight fundamental principles of sustainable excellence and the four theories supporting this vision.

Table 5 ESCO energy transition case and the fundamental principles of sustainable performance

Strategic level	Principles supporting sustainable excellence
Vision	<p>The project creates a sustainable future for the owners of the buildings, their users (students and teachers), and the Regional and Federal Authorities, allowing to meet requirements imposed by energy transition</p> <p>For PXL, the SDGs are integrated into the policy plan (2021–2026) (mission and vision)</p>
Strategy	<p>The project adds an accurate value for each key stakeholder</p> <ul style="list-style-type: none"> – For the owners by increasing energy efficiency, reducing then the use and maintenance costs of their infrastructure, and freeing budgets for alternative projects (especially, for pedagogical projects directly connected to their main educational missions) – For users (students, researchers, and teachers) by benefiting from a healthier and environmentally efficient work environment – For Federal and Regional Authorities by reinforcing their capacity of meeting long-term environmental objectives imposed by the Energy Performance of Buildings Directive <p>The project develops continuously organizational capabilities by its very long-term perspective, by its focus on energy efficiency in the use and maintenance of buildings, and by being supported by an adequate and specific long-term contract</p> <p>The project harnesses creativity and innovation in a cocreation perspective with key stakeholders using a Specific Purpose Vehicle built up in a long-term horizon for effectively meeting the expectations of each stakeholder and by its ability to design and implement new innovative intangible and tangible solutions for solving the evolving problems caused by the objective of maintaining energy efficiency results in a long-term perspective</p>
Operational activities	<p>The project is led with vision and engagement, inspiration and integrity, capitalizing on strict and transparent governance of the SPV put in place for controlling the project</p> <p>The project is managed with agility and responsiveness, evolving in its implementation with the opportunities offered by the development of technologies focused on energy efficiency</p> <p>The project is succeeding through the talent of the many motivated people involved all along with its design and implementation phases</p>
Mission	<p>In the two clusters considered, the project aims at sustaining outstanding and resilient energy efficiency results</p> <p>For PXL, the SDGs are integrated into the policy plan (2021–2026) (mission and vision)</p>

Table 6 ESCO energy transition case considered from the four dominating theories supporting the EFQM 2020 model

Theory	Application to the ESCO energy transition case
Resource-based view	The project is based on a permanent combination of human, technical, and intangible resources, resulting in the production of new technological solutions and of a specific know-how in terms of energy efficiency practices, in financial returns for the Energy Service Company acting as a facilitator and in budgetary results for owners of the buildings
Global value chain theory	The project is completely developed in a global value chain vision, with the emergence (at a macro level) of a new economic actor acting as a facilitator in a support position between the multiple owners and beneficiaries and with meaningful evolutions in the internal value chain of each stakeholder (through the transfer of costly and unproductive activities to the facilitator)
Strategic alignment theory	The project is by nature strongly aligned with the constraints and opportunities emerging from the global environment, being justified and built up for meeting notably the objectives of the Energy Performance Buildings Directive
Stakeholder theory	And finally, this project appears as a typical application of the stakeholder theory as expressed by Freeman (1984) and Donaldson & Preston, 1995, solving the paradoxes induced by the diverse specificities and the multiple and often divergent expectations from many stakeholders

5 Conclusions, Limitations, and Future Research

There is a paradigm shift toward meeting societal needs and mission goals such as climate change and energy transition beyond conventional economic needs and reshaping business as usual toward a more holistic approach to business and innovation. The current research on innovation and its impacts on performance management still largely neglect this, while innovation provides momentum for new and formerly unexplored solutions for societal, economic, technological, and environmental challenges.

The Energy Service Companies' (ESCOs) energy transition case confirms the emergence of a holistic model. It is a good example of how a holistic model for measuring sustainable performance generated by innovative projects could be created. The proposed ESCO case is an excellent illustration of scaling up and compliance with the EPC standard for buildings. This research also contributes to the existing scientific literature with an analysis of a multilevel perspective by classifying business models, giving insight into lifelong learning, highlighting EFQM, anchored in four dominating theories in management science, which in line with the United Nations Sustainable Development Goals gives new insight into new measuring possibilities of sustainable performance. The findings support the unique role of the quadruple helix approach in holistic innovation projects and emphasize the role of higher educational institutions in all aspects of business development.

Further research should be devoted to analyzing a holistic approach to innovation projects from the perspective of higher educational institutions. Higher education is understood as a national development function that aims to prepare talent and create added value for the economy. However, the question remains how much added value higher education brings.

6 Closing Remark

A transition from one-sided driven economic models toward multisided ecosystem models and a transition from shock-sensitive to resilient systems is needed. We are lucky that pioneers have emerged, especially for the energy transition. A movement has been set in motion that must now go into top gear. The different interpretations and approaches to sustainable development make it clear that there are no simple solutions. Even if the analysis of the wicked problems is shared, a simple approach remains difficult. In addition, there are also contradictions within the sustainable development goals themselves, but this should not lead to avoiding the debate. In contrast, interpretation from different points of view is important to reach a more holistic view, involving as many stakeholders as possible (inter- and intradisciplinary). Ultimately, we are preparing the world we want to live in for the next generations, and it is the world of tomorrow that we will shape through our actions today.

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Prof. Dr. Jean-Pierre Segers holds a Ph.D. from the Université de Liège (Belgium). He is Professor of innovation management at Hasselt University (Belgium) and Visiting Professor at Riga Technical University (Latvia). He is Research Fellow at the Université de Liège and Honorary Dean of business at PXL University of Applied Sciences and Arts. He is the co-founder and co-owner of SV.BC and Brains & Trees, which focus mainly on facility management training. His main research interests include innovation management, open innovation, regional innovation policy, innovation districts, business models, biopharma and health care, entrepreneurship, and sustainability.

Prof. Dr. Dirk V. H. K. Franco he has a Ph.D. in Chemistry of the UHasselt. He is Professor at Hasselt University (Belgium), where he teaches basic chemistry, environmental technology, sustainable development, and environmental chemistry. He is also a policy advisor at PXL University of Applied Sciences and Arts, with a special focus on sustainability and the energy efficiency services process within the organization. He is currently the single point of contact for the implementation of the sustainable development goals within the PXL strategic transition project.

Prof. Dr. Didier Van Caillie has a Ph.D. in Business Administration from the Université de Liège. He is Full Professor of management control systems and performance management. He is the founder of the Research Center on Corporate Performance (CEPE). This research center is focused on the study of the design of management control systems and of safety, risk, and performance management systems in any kind of organization, notably in industrial high-tech SMEs (specifically, high-tech spin-offs) and in not-for-profit organizations (specifically, in healthcare organizations).

Prof. Dr. Elina Gaile-Sarkane holds a Ph.D. from Riga Technical University (Latvia). She is Vice-rector for academic affairs, a full professor, and Former Dean of the Faculty of Engineering Economics and Management at Riga Technical University. She focuses her research on topics of management, innovation and technology transfer, entrepreneurship, and various aspects of business.

Prof. Dr. Janaina Macke is Full Professor for social innovation and sustainability at the Business Administration Program, University of Caxias do Sul (Brazil). In addition to her academic experience, she also has experience in large multinational industries and currently works for companies as a consultant in operational and strategic areas. She is Principal Researcher for the Organizational Social Theory Research Group with research interests in the areas of sustainability, social innovation, and regional development (smart–sustainable–resilient development).